CLAIMS

I claim:

1. A procedure for using a time-dependent hyperlink in video, comprising the steps of:

3 (a) associating content reference for at least one hyperlink with a video by

4 associating the content reference with coordinates at which the hyperlink appears in the video,

5 wherein one of the coordinates includes time;

6 (b) transmitting the video from a first content server to a video browser of a

7 user display;

8 (c) selecting by the user a selected hyperlink in the video by selecting

9 coordinates at which the selected hyperlink appears in the video;

10 (d) determining the content reference for a new session of the selected

11 hyperlink based on the selected coordinates;

12 (e) initiating a connection of the browser to the new session of the selected

13 hyperlink; and

14 (f) switching the connection of the browser from the first content server to

15 the new session.

1 2. The procedure of claim 1, wherein said step (b) further comprises

2 transmitting a link stream to the browser in parallel to the video, the link stream including the

3 content reference for the at least one hyperlink when the at least one hyperlink is displayed.

1   3.   The procedure of claim 2, wherein said step (d) comprises determining,

2   by the browser, the content reference based on the information received via the link stream and

3   the coordinates selected in said step (c).

1   4.   The procedure of claim 1, wherein said step (e) is performed prior to

2   step (c) such that said step (f) is performed as a smooth switchover when the hyperlink is

3   selected in said step (c).

1   5.   The procedure of claim 1, wherein said step (d) comprises looking up the

2   content reference in a database in the current content server based on the coordinates selected

3   in said step (c), the database including the content reference cross-referenced with the

4   coordinates at which the at least one hyperlink for the content reference appears in the video.

1   6.   The procedure of claim 1, further comprising the step of downloading a

2   file from the current content server to the browser before performing said step (b), the file

3   containing a database including the content reference cross-referenced with the coordinates at

4   which the at least one hyperlink for the content reference appears in the video and said step (d)

5   comprises looking up the content reference in the downloaded file based on the coordinates

6   selected in said step (c).

1   7.   The procedure of claim 1, wherein said step (e) further comprises

2   initiating at a call processing server a connection to the new session of the selected hyperlink,

3   the call processing server being arranged between the current content server and the browser.

1   8.   The procedure of claim 7, wherein said step (e) is performed prior to

2   step (c) such that said step (f) is performed as a smooth switchover when the hyperlink is

3   selected in said step (c).

1   9.   The procedure of claim 1, wherein said steps (d), (e), and (f) are

2   performed using a switchover application associated with the video in the current content

3   server.

1   10.   The procedure of claim 9, further comprising the step of downloading

2   the switchover application containing information on the at least one hyperlink in the video

3   being transmitted in said step (b).

1   11.   The procedure of claim 10, wherein said step of downloading a

2   switchover application is performed prior to said step (b), and said step (b) comprises

3   establishing a multimedia session, by said switchover application, with the current content

4   server and requesting transmission of a link stream including content reference for the at least

5   one hyperlink.

1   12.   The procedure of claim 10, wherein said step of downloading a

2   switchover application is performed at a given time displacement from the start of the video in

3   said step (b).

1   13.   The procedure of claim 10, wherein said step of downloading a

2   switchover application further comprises downloading a first switchover application and a

3   second switchover application such that the first and second switchover applications are active

4   simultaneously.

1   14.   The procedure of claim 9, wherein the switchover application performs

2   at least one of the following steps:

3   downloading given contents at given points in time;

4   playing contents at given points in time;

5   checking content server availability;

6   selecting from several content servers depending on server load status;

7   requesting the current content server to prepare a content for transmission;

8   requesting the current content server to start transmitting a prepared document;

9   requesting the current content server to start transmitting content from a given

10   displacement;

11   requesting a downloading of a new switchover application for the content

12   referred to by a link;

13   establishing a new session to new content at given points in time;

14   submitting received call processing language scripts to assist establishment of a

15   new session;

16   determining round trip delay between the browser and the content server of the

17   selected hyperlink and adjusting switchover times on the determination;

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18   determining permanent terminal or terminal location specific implications to

19 general session establishment time and adjusting switchover schedules based on the

20 determination;

21   performing procedures needed to join a multicast session;

22   reserving network resources for a new session under establishment or a link or

23 data stream being resumed;

24   freeing network resources for a new session being cleared or a link or data

25 stream being paused;

26   performing video/audio content switchover at a given point in time;

27   comparing link descriptive information with user preference attributes and

28 browser capabilities, in case of failure to satisfy the preference attributes; and

29   cancelling the visualization of the link to the user in case of failure.

1   15.   The procedure of claim 14, wherein said step (f) comprises maintaining a

2 session to the first content server and the switchover application performs the following steps:

3   establishing a new session toward the content of the selected hyperlink at a given

4 point in time;

5   pausing the video/audio content stream of the original content at said step (f);

6   resuming the video/audio content stream of the original content at switchover

7 back to the original content; and

8   releasing the new session toward the content of the selected hyperlink after

9 switchover back to the original content.

1   16.   The procedure of claim 15, wherein said step of resuming the

2   video/audio content stream of the original content including resuming at the point in the

3   original content at which the original content was paused.

1   17.   The procedure of claim 15, wherein the switchover application caches a

2   history of switchover applications.

1   18.   The procedure of claim 3, wherein said steps (d), (e), and (f) are

2   performed using a switchover application associated with the video in the first content server,

3   said step of transmitting a link stream comprises transmitting a link stream including link

4   selection and switchover preparation schedules, said switchover preparation schedules specified

5   in ascii tag notation such that said switchover application performs the step of interpreting said

6   ascii tag notation.

1   19.   The procedure of claim 1, wherein said step (d) includes using an

2   algorithm that determines the location of a hyperlink based on visual characteristics in the

3   video.

1   20.   The procedure of claim 1, wherein the browser performs at least one of

2   the following steps:

3   downloading given contents at given points in time;

4   playing contents at given points in time;

5   checking content server availability;

6   selecting from several content servers depending on server load status;

7   requesting the current content server to prepare a content for transmission;

8   requesting the current content server to start transmitting a prepared document;

9   requesting the current content server to start transmitting content from a given

10 displacement;

11   requesting a downloading of a new switchover application for the content

12 referred to by a link;

13   establishing a new session to new content at given points in time;

14   submitting received call processing language scripts to assist establishment of a

15 new session;

16   determining round trip delay between the browser and the content server of the

17 selected hyperlink and adjusting switchover times on the determination;

18   determining permanent terminal or terminal location specific implications to

19 general session establishment time and adjusting switchover schedules based on the

20 determination;

21   performing procedures needed to join a multicast session;

22   reserving network resources for a new session under establishment or a link or

23 data stream being resumed;

24   freeing network resources for a new session being cleared or a link or data

25 stream being paused;

26   performing video/audio content switchover at a given point in time;

27   comparing link descriptive information with user preference attributes and

28   browser capabilities, in case of failure to satisfy the preference attributes; and

29   cancelling the visualization of the link to the user in case of failure.

1   21.   The procedure of claim 20, wherein said step (f) comprises maintaining a

2   session to the first content server and the browser performs the following steps:

3   establishing a new session toward the link content at a given point in time;

4   pausing the video/audio content stream of the original content at said step (f);

5   resuming the video/audio content stream of the original content at switchover

6   back to the original content; and

7   releasing the new session toward the content of the selected hyperlink after

8   switchover back to the original content.

1   22.   The procedure of claim 21, wherein said step of resuming the

2   video/audio content stream of the original content including resuming at the point in the

3   original content at which the original content was paused.

1   23.   The procedure of claim 21, wherein the browser caches a history of

2   switchover applications.

1   24.   The procedure of claim 1, wherein said step (b) comprises transmitting

2   the video from a current content server to a video browser of a user display via a media proxy

3   controlled by a call processing server.

1   25.   The procedure of claim 24, further comprising the step of downloading a

2   switchover application to said call processing server or a service control means connected to

3   said call processing server, said switchover application containing information on links in the

4   video being transmitted in said step (b).

1   26.   The procedure of claim 25, wherein said step of downloading a

2   switchover application is performed prior to said step (b), and said step (b) comprises

3   establishing a multimedia session, by said switchover application, with the current content

4   server and requesting transmission of a link stream including content reference for the at least

5   one hyperlink.

1   27.   The procedure of claim 25, wherein said step of downloading a

2   switchover application is performed at a given time displacement from the start of the video in

3   said step (b).

1   28.   The procedure of claim 25, wherein said step of downloading a

2   switchover application further comprises downloading a first switchover application and a

3   second switchover application such that the first and second switchover applications are active

4   simultaneously.

1   29.   The procedure of claim 24, wherein the call processing server performs

2   at least one of the following steps:

3   downloading given contents at given points in time;

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4   playing contents at given points in time;

5   checking content server availability;

6   selecting from several content servers depending on server load status;

7   requesting the current content server to prepare a content for transmission;

8   requesting the current content server to start transmitting a prepared document;

9   requesting the current content server to start transmitting content from a given

10   displacement;

11   requesting a downloading of a new switchover application for the content

12   referred to by a link;

13   establishing a new session to new content at given points in time;

14   submitting received call processing language scripts to assist establishment of a

15   new session;

16   determining round trip delay between the browser and the content server of the

17   selected hyperlink and adjusting switchover times on the determination;

18   determining permanent terminal or terminal location specific implications to

19   general session establishment time and adjusting switchover schedules based on the

20   determination;

21   performing procedures needed to join a multicast session;

22   reserving network resources for a new session under establishment or a link or

23   data stream being resumed;

24   freeing network resources for a new session being cleared or a link or data

25   stream being paused;

26   performing video/audio content switchover at a given point in time;

27   comparing link descriptive information with user preference attributes and

28   browser capabilities, in case of failure to satisfy the preference attributes; and

29   cancelling the visualization of the link to the user in case of failure.

1   30.   The procedure of claim 29, wherein said step (f) comprises maintaining a

2   session to the first content server and the call processing server performs the following steps:

3   establishing a new session toward the content of the selected hyperlink at a given

4   point in time;

5   pausing the video/audio content stream of the original content at said step (f);

6   resuming the video/audio content stream of the original content at switchover

7   back to the original content; and

8   releasing the new session toward the content of the selected hyperlink after

9   switchover back to the original content.

1   31.   The procedure of claim 30, wherein said step of resuming the

2   video/audio content stream of the original content including resuming at the point in the

3   original content at which the original content was paused.

1   32.   The procedure of claim 30, wherein the call processing server caches a

2   history of switchover applications.

1   33.   The procedure of claim 1, further comprising the step of performing said

2   steps (d), (e), and (f) for a first new session and performing said steps (d), (e), and (f) for a

3   second new session after said first new session reaches an end, in response to said selected

4   hyperlink.

1   34.   A system for processing a time-dependent hyperlink in a video,

2   comprising:

3   a first content server comprising a video;

4   a user input/output device comprising a display for displaying the video and an

5   input output device for selecting a position on said display;

6   a browser arranged for connecting said user input/output device to said first

7   content server;

8   at least one hyperlink and content reference cross-referenced with coordinates

9   indicating where the at least one hyperlink appears in the video stored in said first content

10   server, said coordinates including display position and time during the video, and said content

11   reference indicating a second content server comprising an electronic document to which the

12   hyperlink is linked;

13   means for determining when said hyperlink is selected; and

14   means for switching over a connection of said browser from said first content

15   server to said second content server for user access to said electronic document in said second

16   content server when said means for determining determines that said hyperlink has been

17   selected.

1   35.   The system of claim 34, further comprising means for transmitting a link

2   stream containing said content reference of said at least one hyperlink from said first content

3   server to said browser on a first communication channel and transmitting said video from said

4   first content server to said browser in parallel to said link stream on a second communication

5   channel.

1   36.   The system of claim 34, wherein said means for switching over

2   comprises means for performing a smooth switchover.

1   37.   The system of claim 36, wherein said means for performing a smooth

2   switchover comprises means for initiating a connection of said browser to said second content

3   server before said user selection said at least one hyperlink.

1   38.   The system of claim 37, wherein said content server comprises a

2   switchover application for performing a smooth switchover and said means for performing a

3   smooth switchover comprises a means for using said switchover application.

1   39.   The system of claim 38, further comprising means for downloading said

2   switchover application to said browser before said video is displayed, and said switchover

3   application comprising means for establishing a multimedia session with said first content

4   server and for requesting transmission of a link stream including content reference for said at

5   least one hyperlink from said first content server.

1 40. The system of claim 38, further comprising means for downloading said

2 switchover application to said browser while said video is displayed.

1 41. The system of claim 38, wherein said browser further comprises means

2 for running more than one of said switchover applications simultaneously.

1 42. The system of claim 35, wherein said content server comprises a

2 switchover application for performing a smooth switchover and said means for performing a

3 smooth switchover comprises a means for using said switchover application, and said link

4 stream comprises link selection and switchover preparation schedules specified in ascii tag

5 notation which is interpretable by said switchover application.

1 43. The system of claim 38, wherein switchover application comprises

2 means for performing at least one of the following steps:

3 downloading given contents of said first content server at given points in time;

4 playing contents of said first content server at given points in time;

5 checking availability of said second content server;

6 selecting from several content servers depending on server load status;

7 requesting said first content server to prepare a content for transmission;

8 requesting said first content server to start transmitting a prepared document;

9 requesting said first content server to start transmitting content from a given

10 displacement;

11 requesting a downloading of a new switchover application for a content referred

12 to by a link;

13 establishing a new session to new content at given points in time;

14 submitting received call processing language scripts to assist establishment of a

15 new session;

16 determining round trip delay between the browser and the content server of the

17 selected hyperlink and adjusting switchover times on the determination;

18 determining permanent terminal or terminal location specific implications to

19 general session establishment time and adjusting switchover schedules based on the

20 determination;

21 performing procedures needed to join a multicast session;

22 reserving network resources for a new session under establishment or a link or

23 data stream being resumed;

24 freeing network resources for a new session being cleared or a link or data

25 stream being paused;

26 performing video/audio content switchover at a given point in time;

27 comparing link descriptive information with user preference attributes and

28 browser capabilities, in case of failure to satisfy the preference attributes; and

29 cancelling the visualization of a link.

1   44.   The system of claim 43, wherein said switchover application comprises

2 means for maintaining a session to the first content server and comprising means for

3 performing the following steps:

4   establishing a new session toward the content of the selected hyperlink at a given

5 point in time;

6   pausing the video/audio content stream of the original content when said new

7 session is established;

8   resuming the video/audio content stream of the original content at switchover

9 back to the original content; and

10   releasing the new session toward the content of the selected hyperlink after

11 switchover back to the original content.

1   45.   The system of claim 44, wherein means for resuming the video/audio

2 content stream of the original content includes means for resuming at the point in the original

3 content at which the original content was paused.

1   46.   The system of claim 44, wherein said switchover application comprises

2 means for caching a history of switchover applications.

1   47.   The system of claim 34, wherein said content server further comprises a

2 link database.

1   48.   The system of claim 47, further comprising means for downloading said

2 link database to said browser.

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1   49.   The system of claim 47, wherein said means for determining when said

2   hyperlink is selected comprises means for querying said link database.

1   50.   The system of claim 34, further comprising a call processing server

2   arranged between said browser and said first content server, said call processing server

3   comprising said means for switching over a connection of said user input/output device from

4   said first content server to said second content server.

1   51.   The system of claim 50, wherein said means for switching over

2   comprises means for performing a smooth switchover.

1   52.   The system of claim 51, wherein said means for performing a smooth

2   switchover comprises means for initiating a connection of said browser to said second content

3   server before said user selection said at least one hyperlink.

1   53.   The system of claim 52, wherein said content server comprises a

2   switchover application for performing a smooth switchover and said means for performing a

3   smooth switchover comprises a means for using said switchover application.

1   54.   The system of claim 53, further comprising means for downloading said

2   switchover application to said browser before said video is displayed, and said switchover

3   application comprising means for establishing a multimedia session with said first content

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4   server and for requesting transmission of a link stream including content reference for said at

5   least one hyperlink from said first content server.

1   55.   The system of claim 53, further comprising means for downloading said

2   switchover application to said browser while said video is displayed.

1   56.   The system of claim 53, wherein said browser further comprises means

2   or running more than one of said switchover applications simultaneously.

1   57.   The system of claim 35, wherein said content server comprises a

2   switchover application and said means for performing a smooth switchover comprises a means

3   for using said switchover application, and further comprising a call processing server arranged

4   between said browser and said first content server, said call processing server comprising said

5   means for switching over a connection of said user input/output device from said first content

6   server to said second content server, said link stream comprises link selection and switchover

7   preparation schedules specified in ascii tag notation which is interpretable by said switchover

8   application.

1   58.   The system of claim 53, wherein said content server comprises means

2   for performing at least one of the following steps:

3   downloading given contents of said first content server at given points in time;

4   playing contents of said first content server at given points in time;

5   checking availability of said second content server;

6   selecting from several content servers depending on server load status;

7   requesting said first content server to prepare a content for transmission;

8   requesting said first content server to start transmitting a prepared document;

9   requesting said first content server to start transmitting content from a given

10 displacement;

11   requesting a downloading of a new switchover application for a content referred

12 to by a link;

13   establishing a new session to new content at given points in time;

14   submitting received call processing language scripts to assist establishment of a

15 new session;

16   determining round trip delay between the browser and the content server of the

17 selected hyperlink and adjusting switchover times on the determination;

18   determining permanent terminal or terminal location specific implications to

19 general session establishment time and adjusting switchover schedules based on the

20 determination;

21   performing procedures needed to join a multicast session;

22   reserving network resources for a new session under establishment or a link or

23 data stream being resumed;

24   freeing network resources for a new session being cleared or a link or data

25 stream being paused;

26   performing video/audio content switchover at a given point in time;

27   comparing link descriptive information with user preference attributes and

28   browser capabilities, in case of failure to satisfy the preference attributes; and

29   cancelling the visualization of a link.

1   59.   The system of claim 58, wherein said content server further comprises

2   means for maintaining a session to the first content server and means for performing the

3   following steps:

4   establishing a new session toward the content of the selected hyperlink at a given

5   point in time;

6   pausing the video/audio content stream of the original content when said new

7   session is established;

8   resuming the video/audio content stream of the original content at switchover

9   back to the original content; and

10   releasing the new session toward the content of the selected hyperlink after

11   switchover back to the original content.

1   60.   The procedure of claim 59, wherein means for resuming the video/audio

2   content stream of the original content includes means for resuming at the point in the original

3 . content at which the original content was paused.

1   61.   The system of claim 59, wherein said content server comprises means

2   for caching a history of sessions.

1   62.   The system of claim 53, further comprising a media proxy connected

2   with said call processing server operative for conducting media transmission between said first

3   content server and said browser.

1   63.   The system of claim 34, wherein said means for determining when a

2   hyperlink is selected comprises an algorithm operative for determining the location of a

3   hyperlink based on visual characteristics of the video.

1   64.   The system of claim 34, wherein said browser comprises means for

2   performing at least one of the following steps:

3   downloading given contents of said first content server at given points in time;

4   playing contents of said first content server at given points in time;

5   checking availability of said second content server;

6   selecting from several content servers depending on server load status;

7   requesting said first content server to prepare a content for transmission;

8   requesting said first content server to start transmitting a prepared document;

9   requesting said first content server to start transmitting content from a given

10   displacement;

11   establishing a new session to a new content at given points in time;

12   submitting received call processing language scripts to assist establishment of a

13   new session;

14   determining round trip delay between the browser and the content server of the

15   selected hyperlink and adjusting switchover times on the determination;

16   determining permanent terminal or terminal location specific implications to

17   general session establishment time and adjusting switchover schedules based on the

18   determination;

19   performing procedures needed to join a multicast session;

20   reserving network resources for a new session under establishment or a link or

21   data stream being resumed;

22   freeing network resources for a new session being cleared or a link or data

23   stream being paused;

24   performing video/audio content switchover at a given point in time;

25   comparing link descriptive information with user preference attributes and

26   browser capabilities, in case of failure to satisfy the preference attributes; and

27   cancelling the visualization of a link.

1   65.   The system of claim 64, wherein said browser further comprises means

2   for maintaining a session to the first content server and comprising means for performing the

3   following steps:

4   establishing a new session toward the content of the selected hyperlink at a given

5   point in time;

6   pausing the video/audio content stream of the original content when said new

7   session is established;

8   resuming the video/audio content stream of the original content at switchover

9   back to the original content; and

10   releasing the new session toward the content of the selected hyperlink after

11   switchover back to the original content.

1   66.   The system of claim 65, wherein means for resuming the video/audio

2   content stream of the original content includes means for resuming at the point in the original

3   content at which the original content was paused.

1   67.   The system of claim 65, wherein said content server comprises means

2   for caching a history of sessions.

1   68.   The system of claim 34, wherein a second content reference and a third

2   content reference are both associated with said at least one hyperlink such that said means for

3   switching over a connection further comprises means for switching over a connection of said

4   browser from said second content reference to said third content reference of said at least one

5   hyperlink after completion of said second content reference is completed.